

Notice of Allowability**Application No.**

10/758,952

Applicant(s)

FERGUSON, BRUCE R.

Examiner

Aaron Piggush

Art Unit

2838

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to amendment filed 10/27/08.
2. ☒ The allowed claim(s) is/are 23,25,26,29,31,32,34,36-40 and 42-45.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
(a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
(b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413),
Paper No./Mail Date 20081206.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

/Aaron Piggush/
Examiner, Art Unit 2838

/Akm Enayet Ullah/
Supervisory Patent Examiner, Art Unit 2838

DETAILED ACTION
EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with John King on December 4, 2008.

The application has been amended as follows:

See ATTACHMENT A, wherein the following amendments have been made by the examiner:

At the end of claim 31, page 5, line 28, please add --, wherein the current provided by the AC adapter is not sensed and is not used to generate any overriding signal when the AC adapter is providing power to the system power terminal.—

At the end of claim 44, page 7, line 2, please add --, and wherein during that time when the AC adapter is selected to provide power, the current provided by the AC adapter is not sensed and is not used to vary a charging current in response to changes in a load current.--

Allowable Subject Matter

2. Claims 23, 25, 26, 29, 31, 32, 34, 36-40, and 42-45 are allowed.

3. The following is an examiner's statement of reasons for allowance: Please see the examiner's amendment and interview summary included in this office action, the "Applicant Arguments/Remarks Made in an Amendment" filed 10/27/08, and below. Please also note that the previous double patenting rejection in the office action of 7/28/08 is now withdrawn due to the amendments and upon further consideration.

Claim 23 recites, inter alia, a method for controlling battery power comprising the acts of: coupling a first input terminal, configured to receive power from an AC adapter, to a system power terminal; coupling a second input terminal, configured to receive power from a USB interface, in series with a current sensing circuit to the system power terminal; wherein a portable electronic device that is coupled to the system power terminal is powered by the AC adapter when the AC adapter is connected and by the USB interface when the USB interface is connected and the AC adapter is not connected and by an internal battery when neither the AC adapter nor the USB interface is connected; coupling the internal battery to the system power terminal via a series connected bi-directional transistor with a configurable body terminal and a control terminal; comparing a voltage at the system power terminal with a voltage at the positive terminal of the battery, wherein the configurable body terminal of the transistor is connected to the first terminal when the system power terminal has a higher voltage than the positive terminal of the battery and connected to the second terminal when the positive terminal of the battery has a higher voltage than the system power terminal; generating a feedback control signal based on the voltage difference between the system power terminal and the battery terminal and a voltage level at the control terminal of the transistor; generating a linearly adjustable voltage for driving the transistor based on the feedback control signal; determining a charging mode of operation

when the voltage difference indicates that the system power terminal has a higher voltage than the positive terminal of the battery by a first predefined amount; using a current sensing circuit to measure current provided by the USB interface to generate an overriding signal to reduce the charging current in response to an increase in a load current provided to the portable electronic device such that the measured current from the USB interface does not exceed a predetermined current threshold; wherein the overriding signal replaces the feedback control signal to generate the linearly adjustable voltage for driving the transistor when the measured current from the USB interface exceeds the predetermined current threshold, and the current sensing circuit does not measure current provided by the AC adapter to generate the overriding signal when the AC adapter is connected.

Claim 31 recites, inter alia, a method of controlling battery power, the method comprising: selectively providing an external primary and secondary power source to a system power terminal of a device with an internal battery, wherein the primary power source is an AC adapter and the secondary power source is a USB interface; coupling the battery to the system power terminal using a bi-directional transistor with a control terminal and a configurable body contact that is connected to the system power terminal during a charging mode and connected to the internal battery during a discharging mode; generating a feedback control signal based on a voltage at the control terminal of the transistor and a voltage difference between the system power terminal and the battery; determining whether the transistor operates in the charging or discharging mode; generating a linearly adjustable voltage based on the feedback control signal; driving the control terminal of the transistor with the linearly adjustable voltage to regulate current, wherein the level of current provided to or supplied by the battery is determined by the

level of the linearly adjustable voltage at the control terminal of the transistor; and sensing current provided by the USB interface to generate an overriding signal to reduce current provided to the battery during the charging mode in response to an increase in current provided to the device such that a total current provided by the USB interface does not exceed a predetermined level, wherein the current provided by the AC adapter is not sensed and is not used to generate any overriding signal when the AC adapter is providing power to the system power terminal.

Claim 44 recites, inter alia, a method for controlling battery power, the method comprising the acts of: selectively providing power from an AC adapter and a USB interface to a system power terminal of an electronic device; coupling the battery to the system power terminal via a series connected bi-directional transistor, wherein the transistor comprises a control terminal and a configurable body contact that is connected to the system power terminal during a charging mode and connected to the battery during a discharging mode; detecting a voltage difference between the system power terminal and the battery; generating a feedback control signal based on the voltage difference and a voltage at the control terminal of the transistor; generating a linearly variable voltage based on the feedback control signal to drive the transistor; applying the linearly variable voltage to the control terminal of the transistor to charge or to discharge the battery, wherein the voltage difference between the system power terminal and the battery determines whether the transistor operates in charging or discharging mode, and the feedback control signal determines the level of current conducted by the transistor; and sensing current provided by the USB interface to vary a charging current provided to the battery during the charging mode in response to changes in a load current for the electronic device such

that a total current provided by the USB interface does not exceed a predetermined current limit, wherein the charging current is not varied in response to changes in the load current when the AC adapter is selected to provide power to the system power terminal, and wherein during that time when the AC adapter is selected to provide power, the current provided by the AC adapter is not sensed and is not used to vary a charging current in response to changes in a load current.

The prior art of record does not disclose the above limitations, nor would it be obvious to modify the art in such a manner.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aaron Piggush whose telephone number is (571)272-5978. The examiner can normally be reached on Monday-Friday 9:30am-6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Akm Ullah can be reached on 571-272-2361. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Akm Enayet Ullah/
Supervisory Patent Examiner, Art Unit
2838

/A. P./
Examiner, Art Unit 2838